

# Review questions

1. Of the following transitions in the Bohr hydrogen atom, the \_\_\_\_\_ transition results in the emission of the lowest-energy photon.

A.  $n = 1 \rightarrow n = 6$

B.  $n = 6 \rightarrow n = 1$

C.  $n = 6 \rightarrow n = 3$

D.  $n = 3 \rightarrow n = 6$

E.  $n = 1 \rightarrow n = 4$

2. Which of the following is a valid set of four quantum numbers? ( $n, l, m_l, m_s$ )

A. 2, 1, 0, +1/2

B. 2, 2, 1, -1/2

C. 1, 0, 1, +1/2

D. 2, 1, +2, +1/2

E. 1, 1, 0, -1/2

3. The charge on an electron was determined in the \_\_\_\_\_.

- A. cathode ray tube, by J. J. Thompson
- B. Rutherford gold foil experiment
- C. Millikan oil drop experiment
- D. Dalton atomic theory
- E. atomic theory of matter

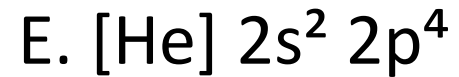
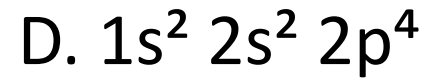
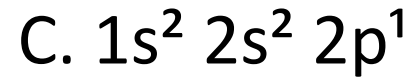
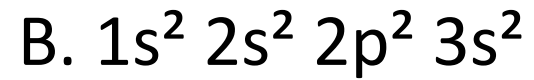
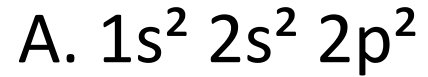
4. Consider the following selected postulates of Dalton's atomic theory:

- (i) Each element is composed of extremely small particles called atoms.
- (ii) Atoms are indivisible.
- (iii) Atoms of a given element are identical.
- (iv) Atoms of different elements are different and have different properties.

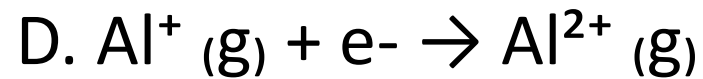
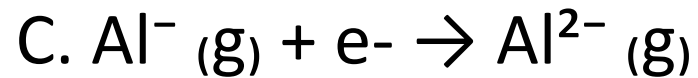
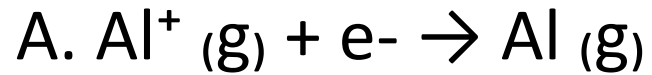
Which of the postulates is(are) no longer considered valid?

- A. (i) and (ii)
- B. (ii) only
- C. (ii) and (iii)
- D. (iii) only
- E. (iii) and (iv)

5. Which one of the following configurations depicts an excited oxygen atom?



6. Which of the following correctly represents the second ionization of aluminum?



7. In the generation of most anions, the energy change (kJ/mol) that \_\_\_\_\_ an electron is \_\_\_\_\_.

- A. removes, positive
- B. adds, positive
- C. removes, negative
- D. adds, negative
- E. None of the above is correct.